

Amendment to the Claims:

The following listing of claims replaces all previous versions and listings of claims:

1. (Currently amended) A method for converting a vertically structured CAD/CAM model to a horizontally structured CAD/CAM model, comprising:
 - identifying a base modeling element of the vertically structured CAD/CAM model and establishing it as a base feature of the vertically structured CAD/CAM model;
 - establishing a parent coordinate system for the horizontally structured CAD/CAM model;
 - identifying a parent modeling element of the vertically structured CAD/CAM model, the parent modeling element including a plurality of modeling features dependent thereof; and
 - identifying each dependency for each of a plurality of modeling features from said parent modeling element; and
 - converting an existing vertically structured CAD/CAM model to a horizontally structured CAD/CAM model by:
 - restructuring each dependency for each said modeling feature for placement with respect to the horizontally structured CAD/CAM model, such that each said modeling feature exhibits a direct associative relationship with a reference feature, said restructuring including:
 - determining if said modeling feature is dependent on an existing datum plane for placement;
 - for modeling features determined to be dependent on an existing datum plane for placement, performing at least one of:
 - configuring a new reference feature for placement of said modeling feature wherein said new reference feature is a descendent of dependent on said parent coordinate system and establishing an associative relationship between said

modeling feature and said new reference feature, then deleting ~~said dependency~~ the dependency between the parent coordinate system and the new reference feature,

reconfiguring said existing datum plane as a descendant of said parent coordinate system, and

establishing an associative relationship with at least one of said parent coordinate system and a ~~descendent~~ reference feature dependent therefrom and deleting ~~said dependency~~ the dependency between the parent coordinate system and the reference feature; and

restructuring each dependency for each said modeling feature for ~~positioning~~ placement with respect to the horizontal model, such that each said modeling feature exhibits ~~a direct~~ an associative relationship with another reference feature.

2. (Currently Amended) The method of Claim 1 wherein said reference feature includes:

said parent coordinate system,

a child coordinate system exhibiting an associative relationship with said parent coordinate system,

a first datum plane exhibiting an associative relationship with at least one of said parent coordinate system and said child coordinate system, and

a second datum plane exhibiting an associative relationship with said first datum.

3. (Currently Amended) The method of Claim 1 wherein said another reference feature includes:

said parent coordinate system,

said child coordinate system exhibiting an associative relationship with said parent coordinate system,

a third datum plane exhibiting an associative relationship with at least one of said parent coordinate system and said child coordinate system, and

a fourth datum plane exhibiting an associative relationship with said third datum plane.

4. (Currently Amended) The method of Claim 1 further including identifying a primitive ~~element~~ in said vertically structured CAD/CAM model.

5. (Currently Amended) The method of Claim 4 further including converting said primitive ~~element~~ to a feature.

6. (Currently Amended) The method of Claim 5 wherein said converting includes establishing a new feature corresponding to said primitive element such that said new feature exhibits an associative relationship with at least one of said parent coordinate system and a child thereof for placement and positioning; ~~and such that said new feature; exhibits an associative relationship with at least one of said parent coordinate system and a child thereof for positioning.~~

7. (Currently amended) The method of Claim 6 wherein said associative relationship between the new feature and the at least one of the parent coordinate system and a child thereof is a parent/child relationship.

8. (Original) The method of Claim 1 wherein said base feature corresponds to a selected primitive element in said vertically structured CAD/CAM model.

9. (Cancelled)

10. (Cancelled)

11. (Previously Presented) The method of Claim 1 wherein said modeling feature dependent from said parent modeling element exhibits a parent child relationship with at least one of said parent modeling element and a descendent thereof such that positioning and placement of said dependent modeling features is relative to said at least one of said parent modeling element and said descendent thereof.

12. (Cancelled)

13. (Cancelled)

14. (Cancelled)

15. (Currently Amended) The method of Claim 1 wherein said restructuring each dependency for each said modeling feature for positioning further includes:

determining if said modeling feature is dependent on at least one existing datum for positioning;

if said modeling feature is dependent on said at least one existing datum plane for positioning placement, then at least one of:

configuring a new reference feature for positioning placement of said modeling feature wherein said new reference feature is a descendent of said parent coordinate system and establishing an associative relationship between said new reference feature and said new reference feature, then deleting said dependency, and

reconfiguring said at least one existing datum plane as a descendant of said parent coordinate system; and

establishing an associative relationship with at least one of said parent coordinate system and a descendent reference feature therefrom and deleting said dependency.

16. (Cancelled)
17. (Previously Presented) The method of Claim 1 wherein none of said modeling features exhibits an associative relationship with any other modeling feature.
18. (Previously Presented) The method of Claim 1 wherein none of said modeling features exhibits an associative relationship with said base feature.
19. (Original) The method of Claim 1 wherein said base feature exhibits an associative relationship with at least one of said coordinate system and a descendent thereof.
20. (Original) The method of Claim 1 wherein a descendent of said coordinate system includes at least one of a reference, point, line, datum plane and another coordinate system positioned and oriented relative to said coordinate system.

21. (Currently amended) A system for converting a vertically structured CAD/CAM model to a horizontally structured CAD/CAM model, comprising:

a computer; and

a computer program executing on the computer, the computer program implementing a method, comprising:

identifying a base modeling element of the vertically structured CAD/CAM model and establishing it as a base feature of the vertically structured CAD/CAM model;

establishing a parent coordinate system for the horizontally structured CAD/CAM model;

identifying a parent modeling element of the vertically structured CAD/CAM model, the parent modeling element including a plurality of modeling features dependent therefrom; and

identifying each dependency for each of a plurality of modeling features from said parent modeling element;

converting an existing vertically structured CAD/CAM model to a horizontally structured CAD/CAM model by:

restructuring each dependency for each said modeling feature for placement with respect to the horizontally structured CAD/CAM model, such that each said modeling feature exhibits a direct associative relationship with a reference feature, said restructuring including:

determining if said modeling feature is dependent on an existing datum plane for placement;

for modeling features determined to be dependent on an existing datum plane for placement, performing at least one of:

configuring a new reference feature for placement of said modeling feature wherein said new reference feature is ~~a descendant of~~ dependent on said parent coordinate system and establishing an associative relationship between said modeling feature and said new reference feature, then deleting ~~said dependency~~ the dependency between the parent coordinate system and the new reference feature,

reconfiguring said existing datum as a descendant of said parent coordinate system; and

establishing an associative relationship with at least one of said parent coordinate system and a ~~descendant~~ reference feature dependent therefrom and deleting ~~said dependency~~ the dependency between the parent coordinate system and the reference feature; and

restructuring each dependency for each said modeling feature for ~~positioning~~ placement with respect to the horizontal model, such that each said modeling feature exhibits ~~a direct~~ an associative relationship with another reference feature.

22. (Currently Amended) The system of Claim 21 wherein said reference feature includes:

the a parent coordinate system,

a child coordinate system exhibiting an associative relationship with said parent coordinate system,

a first datum plane exhibiting an associative relationship with at least one of said parent coordinate system and said child coordinate system, and

a second datum plane exhibiting an associative relationship with said first datum.

23. (Currently Amended) The system of Claim 21 wherein said another reference feature includes:

the a parent coordinate system,

a child coordinate system exhibiting an associative relationship with said parent coordinate system,

a third datum plane exhibiting an associative relationship with at least one of said parent coordinate system and said child coordinate system, and

a fourth datum plane exhibiting an associative relationship with said third datum.

24. (Currently Amended) The system of Claim 21 wherein each ~~at least one of~~ said associative relationship ~~and said another associative relationship~~ is a parent/child relationship.

25. (Previously Presented) The system of Claim 21 wherein said modeling feature exhibits an associative relationship with said base feature.

26. (Currently Amended) The system of Claim 21 wherein said base feature exhibits an associative relationship with at least one of said reference feature and a ~~deseendant~~ feature dependent thereon thereof.

27. (Currently Amended) The system of Claim 21 further including identifying a primitive ~~element~~ in said vertically structured CAD/CAM model.

28. (Currently Amended) The system of Claim 27 further including a new feature established by converting said primitive element to the a feature corresponding to said primitive element such that said new feature exhibits an associative relationship with at least one of said parent coordinate system and a child thereof for placement ~~and~~ positioning; ~~and such that said new feature; exhibits an associative relationship with at least one of said parent coordinate system and a child thereof for positioning.~~

29. (Cancelled)

30. (Currently Amended) The system of Claim 21 wherein said base feature corresponds to a selected primitive ~~element~~ in said vertically structured CAD/CAM model.

31. (Previously presented) The system of Claim 21 wherein said reference feature comprises a coordinate system.

32. (Currently Amended) The system of Claim 31 wherein said coordinate system comprises:

a first datum plane ~~positioned and oriented relative to a reference;~~

a second datum plane ~~positioned and oriented relative to said reference;~~ and

a third datum plane ~~positioned and oriented relative to said reference.~~

33. (Previously presented) The system of Claim 32 wherein said first datum plane, said second datum plane, and said third datum plane are orthogonal.

34. (Previously presented) The system of Claim 21 wherein said reference feature comprises at least one of said coordinate system, another coordinate system, a point, line curve, surface, and datum plane.

35. (Cancelled)

36. (Cancelled)

37. (Cancelled)

38. (Cancelled)

39. (Currently Amended) The system of Claim 21 wherein said restructuring each dependency for each said modeling feature for placement ~~positioning~~ further includes:

if said modeling feature is dependent on said at least one existing datum plane for placement positioning, then at least one of:

a new reference feature is configured for placement ~~positioning~~ of said modeling feature wherein said new reference feature is dependent on a descendent of a parent coordinate system and establishing an associative relationship between said modeling feature and said new reference feature, then deleting said dependency,

said at least one existing datum is reconfigured to be dependent on ~~as a descendent of~~ said parent coordinate system; and

wherein an associative relationship is established with at least one of said parent coordinate system and a ~~descendent~~ reference feature dependent there on ~~therefrom~~ and deleting said dependency.

40. (Cancelled)

41. (Previously Presented) The system of Claim 21 wherein none of said modeling features exhibits an associative relationship with any other said modeling feature.

42. (Previously Presented) The system of Claim 21 wherein none of said modeling features exhibits an associative relationship with said base feature.

43. (Cancelled)

44. (Original) The system of Claim 21 wherein a descendent of said coordinate system includes at least one of a reference, point, line, datum plane and another coordinate system positioned and oriented relative to said coordinate system.

45. (Currently amended) A storage medium encoded with a machine-readable computer program code, wherein said storage medium includes instructions for causing a computer to implement a method for converting a vertically structured CAD/CAM model to a horizontally structured CAD/CAM model comprising:

identifying a base modeling element of the vertically structured CAD/CAM model and establishing it as a base feature of the vertically structured CAD/CAM model;

establishing a parent coordinate system for the horizontally structured CAD/CAM model;

identifying a parent modeling element of the vertically structured CAD/CAM model, the parent modeling element including a plurality of modeling features dependent thereof; and

identifying each dependency for each of a plurality of modeling features from said parent modeling element; and

converting an existing vertically structured CAD/CAM model to a horizontally structured CAD/CAM model by:

restructuring each dependency for each said modeling feature for placement with respect to the horizontally structured CAD/CAM model, such that each said modeling feature exhibits a direct associative relationship with a reference feature, said restructuring including:

determining if said modeling feature is dependent on an existing datum plane for placement;

for modeling features determined to be dependent on an existing datum plane for placement, performing at least one of:

configuring a new reference feature for placement of said modeling feature wherein said new reference feature is ~~a descendent of~~ dependent on said parent coordinate system and establishing an associative relationship between said

modeling feature and said new reference feature, then deleting ~~said dependency~~ the dependency between the parent coordinate system and the new reference feature,

reconfiguring said existing datum plane as a descendant of said parent coordinate system, and

establishing an associative relationship with at least one of said parent coordinate system and a ~~deseendent~~ reference feature dependent therefrom and deleting ~~said dependency~~ the dependency between the parent coordinate system and the reference feature; and

restructuring each dependency for each said modeling feature for ~~positioning~~ placement with respect to the horizontal model, such that each said modeling feature exhibits ~~a direct~~ an associative relationship with another reference feature.

46. (Cancelled)